In the outstanding Office Action, the title of the invention was objected to for not being descriptive; Claims 5-10 were rejected under 35 U.S.C. §112, first paragraph, as being not enabling to one skilled in the art; Claims 5-10 were rejected under 35 U.S.C. §112, second paragraph, for being indefinite; Claims 5 and 7 were rejected under 35 U.S.C. §102(b) as being anticipated by Fellows et al. (U.S. Patent 4,790,465); Claim 6 was rejected under 35 U.S.C. §103(a) as being unpatentable over Fellows et al. in view of Logan et al. (U.S. Patent 4,262,417); and Claims 8-9 were rejected under 35 U.S.C. §103(a) as being unpatentable over Fellows et al. in view of Marks (U.S. Patent 3,783,726).

First, in response to the objection to the title of the present invention, a new title for the subject invention has been submitted herein. The new title is believed to be fully descriptive of the present invention and no further objection to the title is therefore anticipated.

With regard to the rejection of Claims 5-10 under 35 U.S.C. §112, first and second paragraphs, Applicants respectfully traverse the assertion in the Office Action that because the operative range of α is not disclosed, the equation, $\beta \leq -253\alpha + 65$ (mm/minute), is not enabling to one ordinarily skilled in the art as well as indefinite. According to the specification, it should be apparent to one ordinarily skilled in the art that any negative values for β would simply indicate the blade moving away from the optical fiber. Thus, α is necessary a value which always gives rise to β of more than 0 mm/minute. Conversely, because β is always more than 0 mm/minute, a simple algebraic calculation would give the maximum thickness of the blade from the equation as well. As such, Applicants respectfully submit that Claim 5 enables one ordinarily skilled in the art to make and use the subject invention recited therein and that Claim 5 is in compliance with 35 U.S.C. §112, first and second paragraphs.

Briefly, in conventional methods for cutting an optical fiber, cut optical fibers leave end surfaces not sufficiently smooth. Such surfaces influence the transmission loss of a light, causing the low operability of the optical fibers. For example, a conventional method for cutting an optical fiber fails to account that a cutting blade cuts across a varying thickness of an optical fiber, i.e., the cross-section of an optical fiber which gradually increases its thickness toward the middle and gradually decreases thereafter. When constant force is applied to move the cutting blade through the optical fiber, the cutting blade incises through the optical fiber at a varying speed depending upon its depth of incision. The applicants have discovered that a speed of the cutting blade during incision is crucial to obtain a smooth end surface and that the appropriate speed is directly related to a blade thickness of the cutting blade.[1]

To solve this problem and others, the present invention is directed to a method for cutting an optical fiber. According to Claim 5 of the present invention, a method for cutting an optical fiber includes moving a cutting blade having a blade thickness α (mm) at a speed β (mm/minute) during the cutting, wherein $\beta \leq -253\alpha + 65$ (mm/minute). By moving the cutting blade at a speed ascertained based on the blade thickness of the cutting blade, stress on the cutting blade is decreased during cutting, thereby keeping the cutting blade sharp for a longer period.[2] Moreover, by incising an optical fiber at a speed determined based upon the equation, $\beta \leq -253\alpha + 65$ (mm/minute), optical fibers with smooth end surfaces sufficient for high operability can be obtained while an early deterioration of the cutting blade is prevented.[3]

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[1] Specification, page 4, line 8 to page 5, line 2.

[2] Specification, page 4, lines 7-11 and lines 21-24.

[3] Id. page 6, lines 18-22.

Fellows et al. disclose a method for cleaving optical fibers but do not teach moving a cutting blade having a blade thickness α (mm) at a speed β (mm/minute) during the cutting, wherein $\beta \leq -253\alpha + 65$ (mm/minute). More specifically, a method for cutting an optical fiber according to the present invention is directed to *cutting* an optical fiber by crossing a blade across the optical fiber, whereas Fellows et al. disclose a method of *cleaving* an optical fiber by partly cutting the optical fiber and tensioning it on both end sides. In addition, a moving speed of the blade disclosed in Fellows et al. is the moving speed when the blade approaches to the optical fiber, not a moving speed at the cutting of the optical fiber.[4] Further, Fellows et al. disclose how to cleave an optical fiber by superimposing oscillation upon the movement of the blade, thereby moving the blade back and forth, i.e., toward and away, from the optical fiber during its cleaving process.[5] Besides, nowhere in Fellows et al. discloses how fast the blade must move based upon its blade thickness during incision. Accordingly, the specific method recited in Claim 5 is clearly distinguishable from Fellows et al.

Similarly, Logan et al. disclose a tool for cleaving fiber optic elements, but nowhere in Logan et al. teachs moving a cutting blade having a blade thickness α (mm) at a speed β (mm/minute) during the cutting, wherein $\beta \leq -253\alpha + 65$ (mm/minute). Instead, Logan et al. merely disclose how to form a groove in the entire circumference of an optical fiber by using a heated wire tip during their grooving step and how to apply stress around the groove, thereby tearing the optical fiber at the groove.[6] Therefore, the specific method recited in Claim 5 is unambiguously distinguishable from Logan et al.

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[4] See Fellows et al., column 2, lines 60-65.

[5] Id. column 2, line 44 to column 3, line 29.

[6] Logan et al., column , lines 1-8.

Marks simply discloses a wire cutting apparatus, and does not teach a method for cutting an optical fiber by moving a cutting blade having a blade thickness α (mm) at a speed β (mm/minute) during the cutting, wherein $\beta \leq -253\alpha + 65$ (mm/minute). Thus, the specific method recited in Claim 5 is clearly distinguishable from Marks.

For the foregoing reasons, Claim 5 is believed to be allowable. Furthermore, because Claims 6-10 depend directly or indirectly from Claim 5, substantially the same arguments set forth above also apply to these dependent claims. Thus, Claims 6-10 are believed to be allowable as well.

In view of the amendment and the discussions presented above, it is respectfully submitted that the present application is in condition for allowance, and an early action favorable to that effect is earnestly solicited.

Respectfully submitted,

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